Transportation Safety

Section A
Multimodal

Table 2-1 Transportation Fatalities by Mode

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999
Air												
U.S. air carrier[a]	499	261	146	124	1	526	39	168	380	8	1	12
Commuter carrier[b]	N	N	N	28	37	37	7	9	14	46	0	12
On-demand air taxi[c]	N	N	N	69	105	76	[R]51	52	63	39	45	38
General aviation[d]	787	1,029	1,310	1,252	1,239	956	[R]767	734	632	[R]643	[R]624	631
Highway												
Passenger car occupants	N	N	N	25,929	27,449	23,212	24,092	22,423	22,505	22,199	[R]21,194	20,818
Motorcyclists	790	1,650	2,280	3,189	5,144	4,564	3,244	2,227	2,161	2,116	[R]2,294	2,472
Truck occupants[e]	N	N	N	5,817	8,748	7,666	9,306	10,216	10,553	10,972	[R]11,447	12,001
Bus occupants	N	N	N	53	46	57	32	33	21	18	[R]38	58
Pedestrians	7,210	7,990	8,950	7,516	8,070	6,808	6,482	5,584	5,449	5,321	[R]5,228	4,906
Pedalcyclists	490	690	760	1,003	965	890	859	833	765	814	[R]760	750
Other[f]	27,909	36,759	40,637	1,018	669	628	584	501	609	573	[R]540	606
Total highway	**36,399**	**47,089**	**52,627**	**44,525**	**51,091**	**43,825**	**44,599**	**41,817**	[j]**42,065**	**42,013**	[R]**41,501**	**41,611**
Railroad[g]												
Highway-rail grade crossing	1,421	1,610	1,440	917	833	582	698	579	488	461	431	402
Railroad	924	923	785	575	584	454	599	567	551	602	577	530
Transit[h]	**N**	**N**	**N**	**N**	**N**	**N**	**339**	**274**	**264**	**275**	**286**	**299**
Waterborne[i]												
Vessel-related	N	N	178	243	206	131	85	46	50	46	[R]59	44
Not related to vessel casualties	N	N	420	330	281	130	101	137	111	108	76	67
Recreational boating	739	1,360	1,418	1,466	1,360	1,116	865	829	709	821	[R]815	734
Pipeline												
Hazardous liquid pipeline	N	N	4	7	4	5	3	3	5	0	[R]2	4
Gas pipeline	N	N	26	8	15	28	6	18	48	10	17	17
TOTAL fatalities[R]	**U**	**U**	**U**	**U**	**U**	**U**	**47,348**	**44,563**	**44,808**	**44,472**	**43,876**	**43,866**

KEY: N = data do not exist; R = revised; U = data are not available

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Table 2-1 Cont'd Transportation Fatalities by Mode

[a] Carriers operating under 14 CFR 121, all scheduled and nonscheduled service. Since Mar. 20, 1997, 14 CFR 121 include aircraft with 10 or more seats that formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent data.

[b] All scheduled service operating under 14 CFR 135 (commuter air carriers). Before Mar. 20, 1997, 14 CFR 135 applied to aircraft with 30 or fewer seats. Since Mar. 20, 1997, 14 CFR 135 includes only aircraft with fewer than 10 seats. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent data.

[c] Nonscheduled service operating under 14 CFR 135 (on-demand air taxis).

[d] All operations other than those operating under 14 CFR 121 and 14 CFR 135.

[e] Includes light and large trucks.

[f] Includes occupants of other vehicle types and other nonmotorists. For 1960-70, the U.S. Department of Transportation, National Highway Traffic Safety Administration did not break out fatality data to the same level of detail as in later years, so fatalities for those years also include occupants of passenger cars, trucks, and buses.

[g] Includes Amtrak. Highway-rail grade crossing fatalities data for 1970 and before are not comparable with data after 1970 due to change in reporting system. Fatalities include those resulting from train accidents, train incidents, and nontrain incidents. Highway-rail grade crossing fatalities are counted under highway, except train occupants.

[h] Fatalities include those resulting from all reportable incidents, not just from accidents.

[i] Vessel-related casualties include those involving damage to vessels such as caused by collisions or groundings. Fatalities not related to vessel casualties include deaths from falling overboard or from accidents involving onboard equipment.

[j] Includes 2 fatalities that have not been assigned to a specific vehicle type.

NOTES: Numbers may not add to totals because some fatalities are counted in more than one mode. To avoid double counting, the following adjustments have been made: most (not all) highway-rail grade-crossing fatalities have not been added because most (not all) such fatalities involve motor vehicles and, thus, are already included in highway fatalities; for transit, all commuter rail fatalities and motor-bus, trolley-bus, demand-responsive and van-pool fatalities arising from accidents have been subtracted because they are counted as railroad, highway, or highway-rail grade-crossing fatalities. The reader cannot reproduce the total fatalities in this table by simply leaving out the number of highway-rail grade-crossing fatalities in the sum and subtracting the above transit submodes, because in so doing, grade-crossing fatalities not involving motor vehicles would be left out (see table 2-36 on rail). An example of such a fatality is a bicyclist hit by a train at a grade crossing.

Caution must be exercised in comparing fatalities across modes because significantly different definitions are used. In particular, rail and transit fatalities include incident-related (as distinct from accident-related) fatalities, such as fatalities from falls in transit stations or railroad employee fatalities from a fire in a workshed. Equivalent fatalities for the air and highway modes (fatalities at airports not caused by moving aircraft or fatalities from accidents in automobile repair shops) are not counted toward the totals for these modes. Thus, fatalities not necessarily directly related to in-service transportation are counted for the transit and rail modes, potentially overstating the risk for these modes.

SOURCES:

Air:

U.S. air carrier: 1960: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1967* (Washington, DC: December 1968).

1965-70: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1975*, NTSB/ARC-77/1 (Washington, DC: January 1977).

1975: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1983*, NTSB/ARC-87/01 (Washington, DC: February 1987), table 18.

1980: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), tables 2 and 16.

1985-99: Ibid., Internet site www.ntsb.gov/aviation, table 5, as of April 2000.

Commuter: 1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1980*, NTSB/ARC-83/01 (Washington, DC: January 1983), tables 26 and 40.

1985-99: Ibid., Internet site www.ntsb.gov/aviation, table 9, as of April 2000.

On-demand air taxi: 1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), table 61.

1985-99: Ibid., Internet site www.ntsb.gov/aviation, table 9, as of April 2000 (1999 data as preliminary).

General aviation: 1960-70: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. General Aviation, Calendar Year 1970*, NTSB/ARG-74/1 (Washington, DC: April 1974), table 117.

1975-80: Ibid., *Annual Review of Aircraft Accident Data: General Aviation, Calendar Year 1985*, NTSB/ARG-87/03 (Washington, DC: October 1987), table 21.

1985-99: Ibid., Internet site www.ntsb.gov/aviation, table 10, as of April 2000.

Highway:

1960-65: Estimated by U.S. Department of Transportation, National Highway Traffic Safety Administration from data supplied by U.S. Department of Health and Human Services, National Center for Health Statistics, and individual state accident reports (adjusted to 30-day deaths). Fatalities data prior to 1975 have been adjusted to reflect the Fatality Analysis Reporting System's definition of a fatal crash as one that involves a motor vehicle on a trafficway that results in the death of a vehicle occupant or a nonmotorist within 30 days of the crash.

1970-97: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 1997*, DOT HS 808 806 (Washington, DC: November 1998), table 4.

1998-99: Ibid., *Traffic Safety Facts 1998*, DOT HS 808 983 (Washington, DC: October 1999), table 4, and personal communication, July 24, 2000; and National Center for Statistics and Analysis, Fatality Analysis Reporting System (FARS) Database, personal communication, Sept. 11, 2000.

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Table 2-1 Cont'd Transportation Fatalities by Mode

Rail:

Highway-rail grade crossing: 1960-70: National Safety Council, *Accident Facts, 1974* (Washington, DC: 1974).

1975-80: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, personal communication.

1985-90: Ibid., *Rail-Highway Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), table S.

1995-97: Ibid., *Railroad Safety Statistics Annual Report 1997* (Washington, DC: September 1998), table 1-1.

1998: Ibid., Office of Safety, Internet site http://safetydata.fra.dot.gov/officeofsafety/Prelim/1998/r03.htm, as of July 23, 1999.

1999: Ibid., Office of Safety, Internet site http://safetydata.fra.dot.gov/officeofsafety/Prelim/1998/r01.htm, as of June 30, 2000.

Railroad: 1960-65: National Safety Council, *Accident Facts, 1974* (Washington, DC: 1974).

1970-90: U.S. Department of Transportation, Federal Railroad Administration, *Highway-Rail Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), table 7.

1995-97: Ibid., *Railroad Safety Statistics Annual Report 1997* (Washington, DC: September 1998), table 1-1.

1998: Ibid., Office of Safety, Internet site http://safetydata.fra.dot.gov/officeofsafety/Prelim/1998/r03.htm, as of July 23, 1999.

1999: Ibid., Office of Safety, Internet site http://safetydata.fra.dot.gov/officeofsafety/Prelim/1998/r01.htm, as of June 30, 2000.

Transit:

1990-98: U.S. Department of Transportation, Federal Transit Administration, *Safety Management Information Statistics 1998* (Washington, DC: 1999), p. 42.

1999: Ibid., personal communication, Dec. 6, 2000.

Water:

Vessel- and nonvessel-related: 1970-98: U.S. Department of Transportation, U.S. Coast Guard, Office of Investigations and Analysis, Compliance Analysis Division, (G-MOA-2), personal communication, Apr. 13, 1999.

Recreational boating: 1960-97: Ibid., Office of Boating Safety, *Boating Statistics* (Washington, DC: Annual issues).

1998: Ibid., Personal communication, Oct. 4, 1999.

Hazardous liquid and gas pipeline:

1970-99: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, personal communication and Internet site http://ops.dot.gov as of June 28, 2000.

Table 2-2 Injured Persons by Transportation Mode

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999
Air[a]												
U.S. air carrier[b]	N	N	107	81	19	30	29	25	77	39	28	57
Commuter carrier[c]	N	N	N	N	14	16	11	25	2	1	2	2
On-demand air taxi[d]	N	N	N	N	43	41	36	14	20	23	[R]10	14
General aviation[e]	N	N	715	769	[R]681	483	402	395	359	365	[R]330	325
Highway												
Passenger car occupants	N	N	N	N	N	N	2,376,000	2,469,000	2,458,000	2,341,000	2,201,000	2,138,000
Motorcyclists	N	N	N	N	N	N	84,000	57,000	55,000	53,000	49,000	50,000
Truck occupants[f]	N	N	N	N	N	N	547,000	752,000	794,000	786,000	792,000	880,000
Bus occupants	N	N	N	N	N	N	33,000	19,000	20,000	17,000	16,000	22,000
Pedestrians	N	N	N	N	N	N	105,000	86,000	82,000	77,000	69,000	85,000
Pedalcyclists	N	N	N	N	N	N	75,000	67,000	58,000	58,000	53,000	51,000
Other[g]	N	N	N	N	N	N	11,000	14,000	15,000	17,000	12,000	10,000
Total highway[R]	**N**	**N**	**N**	**N**	**N**	**N**	**3,231,000**	**3,465,000**	**[R]3,483,000**	**3,348,000**	**3,192,000**	**3,236,000**
Railroad[h]												
Highway-rail grade crossing	3,367	3,725	3,272	3,860	3,550	2,687	2,407	1,894	1,610	1,540	1,303	[P]1,396
Railroad	16,113	21,930	17,934	50,138	58,696	31,617	22,736	12,546	10,948	10,227	10,156	10,509
Transit[i]	**N**	**N**	**N**	**N**	**N**	**N**	**54,556**	**57,196**	**55,288**	**56,132**	**55,990**	**55,325**
Waterborne[j]												
Vessel-related	N	N	105	97	180	172	175	145	129	109	83	113
Not related to vessel casualties	N	N	U	U		U	U	1,916	1,298	947	357	399
Recreational boating	929	927	780	2,136	2,650	2,757	3,822	4,141	4,442	4,555	[R]4,612	4,315
Pipeline												
Hazardous liquid pipeline	N	N	21	17	15	18	7	11	13	5	[R]6	20
Gas pipeline	N	N	233	214	177	108	69	53	114	72	[R]75	87
TOTAL injured persons[R]	**U**	**U**	**U**	**U**	**U**	**U**	**U**	**3,518,000**	**3,532,000**	**3,397,000**	**3,241,000**	**3,284,000**

KEY: N = data do not exist; P = preliminary; R = revised; U = data are not available

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[a] Injuries classified as serious. See definitions of injuries in the glossary.

[b] All scheduled and nonscheduled service operating under 14 CFR 121. Since Mar. 20, 1997, 14 CFR 121 includes only aircraft with 10 or more seats formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent data.

[c] All scheduled service operating under 14 CFR 135 (commuter air carriers). Before Mar. 20, 1997, 14 CFR 135 applied to aircraft with 30 or fewer seats. Since Mar. 20, 1997, 14 CFR 135 includes only aircraft with fewer than 10 seats. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent data.

[d] Nonscheduled service operating under 14 CFR 135 (on-demand air taxis).

[e] All operations other than those operating under 14 CFR 121 and 14 CFR 135.

[f] Includes light and large trucks.

[g] Includes occupants of other unknown vehicle types and other nonmotorists.

[h] Includes Amtrak. Figures include those injuries resulting from train accidents, train incidents, and nontrain incidents. Injury figures also include occupational illness. Railroad injuries data for 1970 and before are not comparable with data after 1970 due to change in reporting system. Highway-rail grade crossing injuries are counted under highway, except train occupants.

i Includes motor bus, commuter rail, heavy rail, light rail, demand responsive, van pool, and automated guideway. Transit injuries include those resulting from all reportable incidents, not just from accidents.

[j] Vessel-related injuries include those involving damage to vessels such as caused by collisions or groundings. Injuries not related to vessel casualties include those from falls overboard or from accidents involving onboard equipment.

NOTES: The motor vehicle injury data in this table come from the U.S. Department of Transportation, National Highway Traffic Safety Administration's General Estimates System (GES). The data from GES, which began operation in 1988, are obtained from a nationally representative probability sample selected from all police-reported crashes. The GES sample includes only crashes where a police accident report was completed and the crash resulted in property damage, injury, or death. The resulting figures do not take into account crashes that were not reported to the police or did not result in property damage. The 1993 NTS Historical Compendium and earlier editions used injury figures estimated by the National Safety Council, which used a different set of methods to arrive at its figures. Thus, the injury figures in this edition of NTS may not be comparable with those found in earlier editions.

Numbers may not add to totals because some injuries are counted in more than one mode. To avoid double counting, the following adjustments have been made in the total injured row:

- most (not all) highway-rail grade crossing injuries have not been added because most (not all) such injuries involve motor vehicles and, thus, are already included in highway injuries;
- for transit, all commuter rail injuries and motor-bus, trolley-bus, demand-responsive, and van-pool injuries arising from accidents have been subtracted because they are counted as railroad, highway, or highway-rail grade crossing injuries.

The reader cannot reproduce the total injuries count in this table by simply leaving out the number of highway-rail grade crossing injuries in the sum and subtracting the above transit submodes, because in so doing, grade-crossing injuries not involving motor vehicles would be left out (see table 2-36 on rail). An example of such an injury is a bicyclist injured by a train at a grade crossing.

SOURCES:

Air:

U.S. air carrier: 1970-90: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues).

1995-99: Ibid., Analysis and Data Division, personal communications, Aug. 8, 1996; Mar. 10, 1999; and Mar. 23, 2000.

Commuter carrier, and on-demand air taxi: 1980-90: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations* (Washington, DC: Annual issues).

1995-99: Ibid., Analysis and Data Division, personal communications, 1996, 1997, 1998, and Mar. 23, 2000.

General aviation: 1970-90: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: General Aviation* (Washington, DC: Annual issues).

1995-99: Ibid., Analysis and Data Division, personal communications, 1996, 1997, 1998, and Mar. 23, 2000.

Highway:

1990-97: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 1997*, DOT HS 808 806 (Washington, DC: November 1998), table 4.

1998: Ibid., *Traffic Safety Facts 1998*, DOT HS 808 983 (Washington, DC: October 1999), table 4.

1999: Ibid., General Estimates System Database and personal communication, Sept. 8, 2000.

Rail:

Highway-rail grade crossings: 1960-70: National Safety Council, *Accident Facts, 1974* (Washington, DC: 1974).

1975: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, personal communication.

1980-90: Ibid., *Rail-Highway Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), table S.

1995-97: U.S. Department of Transportation, Federal Railroad Administration, *Railroad Safety Statistics Annual Report 1997* (Washington, DC: September 1998), table 1-1.

1998-99: Ibid., Office of Safety, Internet site http://safetydata.fra.dot.gov/officeofsafety/Prelim/1999/r11.htm, as of June 28, 2000.

Railroad:

1960-70: National Safety Council, *Accident Facts, 1974* (Washington, DC: 1974).

1970-90: U.S. Department of Transportation, Federal Railroad Administration, *Highway-Rail Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), table 7.

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Table 2-2 Cont'd Injured Persons by Transportation Mode

1995-97: U.S. Department of Transportation, Federal Railroad Administration, *Railroad Safety Statistics Annual Report 1997* (Washington, DC: September 1998), table 1-1.

1998-99: Ibid., Office of Safety, Internet site http://safetydata.fra.dot.gov/officeofsafety/Prelim/1999/r01.htm, as of June 28, 2000.

Transit:

1990-98: U.S. Department of Transportation, Federal Transit Administration, *Safety Management Information Statistics* (Washington, DC: Annual issues).

1999: Ibid., personal communication, Dec. 6. 2000.

Water:

Waterborne transportation: 1970-98: U.S. Department of Transportation, U.S. Coast Guard, Office of Investigations and Analysis, Compliance Analysis Division, (G-MOA-2), personal communication, Apr. 13, 1999.

Recreational boating: 1960-98: Ibid., Office of Boating Safety, *Boating Statistics* (Washington, DC: Annual issues).

1998: Ibid., Personal communication, Oct. 4, 1999.

Hazardous liquid and gas pipeline:

1970-99: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, personal communication; and Internet site http://ops.dot.gov as of June 28, 2000.

Table 2-3 Transportation Accidents[a] by Mode

	1960	1965	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999
Air												
U.S. air carrier[b]	90	83	55	37	19	21	24	36	38	49	[R]50	52
Commuter carrier[c]	N	N	N	48	38	18	15	12	11	17	8	13
On-demand air taxi[d]	N	N	N	152	171	157	107	75	90	82	[R]77	76
General aviation[e]	4,793	5,196	4,712	3,995	3,590	2,739	2,215	2,053	1,907	1,858	[R]1,908	1,909
Highway												
Passenger car	N	N	N	N	N	N	5,561,000	5,594,000	5,599,000	5,423,000	5,146,000	4,916,000
Motorcycle	N	N	N	N	N	N	103,000	66,000	66,000	61,000	54,000	57,000
Truck[f]	N	N	N	N	N	N	2,460,000	3,039,000	3,175,000	3,225,000	3,168,000	3,425,000
Bus	N	N	N	N	N	N	60,000	58,000	57,000	53,000	53,000	63,000
Total highway crashes[a]	**N**	**N**	**N**	**N**	**N**	**N**	**6,471,000**	**6,699,000**	**6,770,000**	**6,624,000**	**6,335,000**	**6,279,000**
Rail												
Highway-rail grade crossing[g,h]	3,195	3,820	3,559	12,076	10,612	6,919	5,713	4,633	4,257	3,865	[R]3,508	3,489
Railroad[g,i]	N	N	8,095	8,041	8,205	3,275	2,879	2,459	2,443	2,397	2,575	2,768
Transit[j]	**N**	**N**	**N**	**N**	**N**	**N**	**58,002**	**25,683**	**25,166**	**24,924**	**23,937**	**23,416**
Waterborne												
Vessel-related	N	N	2,582	3,310	4,624	3,439	3,613	4,196	3,799	3,704	3,872	3,654
Recreational boating	2,738	3,752	3,803	6,308	5,513	6,237	6,411	8,019	8,026	[R]8,047	[R]8,061	7,935
Pipeline												
Hazardous liquid pipeline	N	N	351	254	246	183	180	188	[R]193	[R]171	154	165
Gas pipeline	N	N	1,077	1,338	1,524	334	198	161	187	175	[R]234	174
TOTAL accidents	**U**	**U**	**U**	**U**	**U**	**U**	**6,517,000**	**6,752,000**	**[R]6,820,000**	**6,675,000**	**6,387,000**	**6,330,000**

KEY: N = data do not exist; R = revised; U = data are not available

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Table 2-3 Cont'd Transportation Accidents[a] by Mode

[a] The U.S. Department of Transportation, National Highway Traffic Safety Administration uses the term "crash" instead of accident in its highway safety data. Highway crashes often involve more than one motor vehicle, hence "total highway crashes" is smaller than the sum of the components.

[b] Carriers operating under 14 CFR 121, all scheduled and nonscheduled service. Since Mar. 20, 1997, 14 CFR 121 includes only aircraft with 10 or more seats formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent data.

[c] All scheduled service operating under 14 CFR 135. Since Mar. 20, 1997, 14 CFR 121 includes only aircraft with 10 or more seats formerly operated under 14 CFR 135. This change makes it difficult to compare pre-1997 data for 14 CFR 121 and 14 CFR 135 with more recent years' data.

[d] Nonscheduled service operating under 14 CFR 135.

[e] All operations other than those operating under 14 CFR 121 and 14 CFR 135.

[f] Includes light and large trucks.

[g] Includes Amtrak.

[h] Includes both accidents and incidents. Data not comparable after 1970 due to change in reporting system. Most highway-rail grade crossing accidents are counted under highway.

[i] Train accidents only.

[j] Accident figures include collisions with vehicles, objects, and people, derailments/vehicles going off the road. Accident figures do not include fires and personal casualties.

NOTES: The motor vehicle crash data in this table come from the U.S. Department of Transportation, National Highway Traffic Safety Administrations' General Estimates System (GES), which began operation in 1988. GES data are obtained from a nationally representative probability sample selected from all police-reported crashes. The GES sample includes only crashes where a police accident report was completed and the crash resulted in property damage, injury, or death. The resulting figures do not take into account crashes that were not reported to the police or did not result in property damage. The 1993 NTS Historical Compendium and earlier editions used crash figures estimated by the National Safety Council, which used a different set of methods to arrive at its figures. Thus, the crash figures in this edition of NTS may not be comparable with those found in earlier editions.

Numbers may not add to totals because some accidents/crashes are counted in more than one mode. To avoid double counting, the following adjustments have been made:

- most (not all) highway-rail grade-crossing injuries have not been added because most (not all) such accidents involve motor vehicles and, thus, are already included in highway crashes;
- for transit, all commuter rail accidents and motor bus, trolley bus, demand responsive, and van pool accidents have been subtracted because they are counted as railroad, high way, or highway-rail grade-crossing accidents.

Note that the reader cannot reproduce the total accidents count in this table by simply leaving out highway-rail grade-crossing accidents in the sum and subtracting the above transit submodes, because in so doing, grade-crossing accidents not involving motor vehicles would be left out (see table 2-36 on rail). An example of such an accident is a bicyclist hit by a train at a grade crossing.

SOURCES:

Air:

Air carrier: 1960: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1967* (Washington, DC: December 1968).

1965-70: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1975*, NTSB/ARC-77/1 (Washington, DC: January 1977).

1975: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1983*, NTSB/ARC-87/01 (Washington, DC: February 1987), table 18.

1980: Ibid., *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: February 1985), tables 2 and 16.

1985-97: Ibid., Press release, SB-99-06, Internet site www.ntsb.gov/aviation, table 5, as of Mar. 2, 1999.

1998-99: Ibid., personal communication, Mar. 28, 2000.

Commuter air carrier: 1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1980*, NTSB/ARC-83/01 (Washington, DC: January 1983), tables 26 and 40.

1985-97: Ibid., Internet site www.ntsb.gov/aviation, table 8, as of Mar. 2, 1999.

1998-99: Ibid., personal communication, Mar. 28, 2000.

On-demand air taxi: 1975-80: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: U.S. Air Carrier Operations, Calendar Year 1981*, NTSB/ARC-85/01 (Washington, DC: Feb. 1985), table 61.

1985-97: Ibid., Internet site www.ntsb.gov/aviation, table 9, as of Mar. 2, 1999.

1998-99: Ibid., personal communication, Mar. 28, 2000.

General aviation: 1960-70: National Transportation Safety Board, *Annual Review of Aircraft Accident Data: General Aviation, Calendar Year 1970*, NTSB/ARG-74/1 (Washington, DC: April 1974), table 117.

1975-80: Ibid., *Annual Review of Aircraft Accident Data: General Aviation, Calendar Year 1985*, NTSB/ARG-87/03 (Washington, DC: October 1987), table 21.

1985-97: Ibid., Press release, SB-99-06, Internet site www.ntsb.gov/aviation, table 10, Mar. 2, 1999.

1998-99: Ibid., personal communication, Mar. 28, 2000.

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Table 2-3 Cont'd Transportation Accidents[a] by Mode

Highway:

1990-99: U.S. Department of Transportation, National Highway Traffic Safety Administration, National Center for Statistics and Analysis, *Traffic Safety Facts 1998,* DOT HS 808 983 (Washington, DC: October 1999), table 1, and personal communication, Sept. 11, 2000.

Rail:

Highway-rail grade crossings: 1960-70: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Rail-Highway Grade-Crossing Accidents* (Washington, DC: Annual issues).

1975-80: Ibid., Office of Policy and Program Development, personal communication.

1985-90: Ibid., *Rail-Highway Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), table S.

1995-97: Ibid., *Railroad Safety Statistics Annual Report 1997* (Washington, DC: September 1998), table 1-1.

1999: Ibid., Office of Safety, Internet site http://safetydata.fra.dot.gov/officeofsafety/Prelim/1998/r01.htm, as of July 28, 2000.

Railroad: 1970-90: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Accident/Incident Bulletin* (Washington, DC: Annual issues), table 4.

1995-98: Ibid., *Railroad Safety Statistics Annual Report 1998* (Washington, DC: July 1999), table 1-1.

1999: Ibid., Office of Safety, Internet site http://safetydata.fra.dot.gov/officeofsafety/Prelim/1999/r01.htm, as of June 28, 2000.

Transit:

1990-98: U.S. Department of Transportation, Federal Transit Administration, *Safety Management Information Statistics 1998* (Washington, DC: 2000), p. 53-54.

1999: Ibid., personal communication, Dec. 6, 2000.

Water:

Vessel-related: 1970-98: U.S. Department of Transportation, U.S. Coast Guard, Office of Investigations and Analysis, Compliance Analysis Division, personal communication, Apr. 13, 1999.

Recreational boating: 1960-98: Ibid., Office of Boating Safety, *Boating Statistics* (Washington, DC: Annual issues).

Hazardous liquid and gas pipeline:

1970-99: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, Internet site, http://ops.dot.gov as of June 28, 2000.

Table 2-4 Distribution of Transportation Fatalities by Mode

	1999		1998	
	Number	Percent of total	Number	Percent of total
Passenger car occupants	20,818	47.5	21,194	48.3
Light-truck occupants	11,243	25.6	10,705	24.4
Pedestrians struck by motor vehicles	4,906	11.2	5,228	11.9
Motorcyclists	2,472	5.6	2,294	5.2
Large-truck occupants	758	1.7	742	1.7
Pedalcyclists struck by motor vehicles	750	1.7	761	1.7
Recreational boating	734	1.7	815	1.9
General aviation	628	1.4	623	1.4
Railroad[a] (excluding grade crossings)	530	1.2	577	1.3
Other and unknown motor vehicle occupants	457	1.0	409	0.9
Other nonoccupants struck by motor vehicles[b]	149	0.3	131	0.3
Heavy rail transit (subway)	84	0.2	54	0.1
Waterborne transportation (nonvessel-related)[R]	67	0.2	76	0.2
Bus occupants (school, intercity, and transit)	58	0.1	38	0.1
Grade crossings, not involving motor vehicles[c]	57	0.1	62	0.1
Air taxi	38	0.09	45	0.1
Waterborne transportation (vessel-related)	44	0.1	59	0.3
Light rail transit	17	0.04	23	0.05
Gas distribution pipelines	15	0.03	16	0.04
Air carriers	12	0.03	1	<0.01
Commuter air	12	0.0	0	0.0
Transit buses, fatalities not related to accidents[d]	11	0.03	19	0.04
Hazardous liquid pipelines	4	<0.01	2	<0.01
Gas transmission pipelines	2	<0.01	1	<0.01
Demand response transit, fatalities not related to accidents[d]	0	0.0	2	<0.01
Total of all modes[e]	**43,866**	**100.0**	**43,876**	**100.0**
Other counts, redundant with above[f]				
Grade crossings, with motor vehicles	345		369	
Commuter rail	95		94	
Transit buses, accident-related fatalities	91		90	
Passengers on railroad trains	14		4	
Demand responsive transit, accident-related fatalities	1		2	

KEY: R = revised

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Table 2-4 Cont'd Distribution of Transportation Fatalities by Mode

[a] Includes fatalities outside trains, except at grade crossings.

[b] Includes all nonoccupant fatalities, except pedalcyclists and pedestrians.

[c] Grade-crossing fatalities involving motor vehicles are included in counts for motor vehicles.

[d] Fatalities not related to transit bus and demand responsive transit accidents are not included under highway submodes.

[e] Unless otherwise specified, includes fatalities outside the vehicle.

[f] Fatalities at grade crossings with motor vehicles are included under relevant motor vehicle modes. Commuter rail fatalities are counted under railroad. For transit bus and demand responsive transit accidents, occupant fatalities are counted under "bus" and nonoccupant fatalities are counted under "pedestrians," "pedal cyclists," or other motor vehicle categories.

SOURCES:

Air data: National Transportation Safety Board, Internet site www.ntsb.gov/aviation, as of April 2000.

Highway data: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 1998* (DOT HS 808 983) (Washington, DC : October 1999), table 4, and personal communication, Oct. 4, 1999.

Railroad data: U.S. Federal Railroad Administration, *Railroad Safety Statistics, Annual Report 1998* (Washington, DC: July 1999), table 1-1.

Transit data: U.S. Department of Transportation, Federal Transit Administration, *Safety Management Information Statistics* (Washington, DC: Annual issues).

Waterborne transportation: U.S. Department of Transportation, U.S. Coast Guard, Office of Investigations and Analysis, Compliance Analysis Division, (G-MOA-2), personal communication, Apr. 13, 1999.

Recreational boating: Ibid., Office of Boating Safety. *Boating Statistics* (Washington, DC: Annual issues).

Pipeline data: U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, and Internet site http://ops.dot.gov as of June 28, 2000.

Table 2-5 Highway-Rail Grade-Crossing Safety and Property Damage Data

	1970	1975	1980	1985	1990	1995	1996	1997	1998	1999
Fatalities	[a]1,440	917	833	582	698	579	488	461	431	402
Injured persons	3,272	3,860	3,550	2,687	2,407	1,894	1,610	1,540	1,303	1,396
Accidents	[a]3,559	12,076	10,612	6,919	5,713	4,633	4,257	3,865	[R]3,508	3,489
Property damage ($ millions)										
Railroad vehicles and property	N	N	6.5	8.7	13.1	10.1	8.8	15.0	14.4	23.0

KEY: N = data do not exist; R = revised

[a] 1970 data are not comparable to later years due to change in reporting system.

SOURCES:

Fatalities, injuries, accidents: 1970-90: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Rail-Highway Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), tables S and 11.

1995: Ibid., *Highway-Rail Crossing Accident/Incident and Inventory Bulletin* (Washington, DC: Annual issues), tables S, 1, and 11.

1997: Ibid., *Railroad Safety Statistics Annual Report 1997* (Washington, DC: September 1998).

1998: Ibid., Internet site http://safetydata.fra.dot.gov/OfficeofSafety, as of May 4, 1999, and May 17, 2000.

Property damage: 1970-96: U.S. Department of Transportation, Federal Railroad Administration, Office of Policy and Program Development, *Accident/Incident Bulletin* (Washington, DC: Annual issues), table 5.

1996-98: Ibid., Internet site http://safetydata.fra.dot.gov, as of Aug. 17, 1999.

1999: Ibid., Internet site http://safetydata.fra.dot.gov/objects/bul/99.pdf as of Nov. 28, 2000.

Table 2-6 Hazardous Materials Safety and Property Damage Data

	1975	1980	1985	1990	1995	1996	1997	1998	1999
Total fatalities	**27**	**19**	**8**	**8**	**7**	**120**	**R12**	**13**	**5**
Accident-related	21	14	7	7	6	7	R10	8	3
Air fatalities	**0**	**0**	**0**	**0**	**0**	**110**	**0**	**0**	**0**
Accident-related	0	0	0	0	0	0	0	0	0
Highway fatalities	**27**	**17**	**8**	**8**	**7**	**8**	**R12**	**13**	**5**
Accident-related	21	12	7	7	6	5	R10	8	3
Rail fatalities	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**
Accident-related	0	2	0	0	0	2	0	0	0
Water[a] fatalities	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Accident-related	0	0	0	0	0	0	0	0	0
Other[b] fatalities	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Accident-related	0	0	0	0	0	0	0	0	0
Total injured persons	**648**	**626**	**253**	**423**	**R400**	**R1,175**	**R225**	**197**	**267**
Accident-related	168	47	16	18	18	R864	16	15	13
Air injured persons	**5**	**8**	**4**	**39**	**R33**	**R33**	**24**	**20**	**13**
Accident-related	0	0	0	0	0	0	0	0	0
Highway injured persons	**527**	**493**	**195**	**311**	**296**	**R216**	**R156**	**153**	**217**
Accident-related	156	43	9	9	14	R22	11	11	13
Rail injured persons	**99**	**121**	**53**	**73**	**71**	**926**	**45**	**22**	**37**
Accident-related	12	4	7	9	4	842	5	4	0
Water[a] injured persons	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**
Accident-related	0	0	0	0	0	0	0	0	0
Other[b] injured persons	**15**	**3**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Accident-related	0	0	0	0	0	0	0	0	0
Total incidents	**10,951**	**15,719**	**6,019**	**R8,879**	**14,743**	**R13,950**	**R13,995**	**15,349**	**16,881**
Accident-related	440	486	364	297	**R294**	R332	R310	316	272
Air incidents	**147**	**223**	**114**	**297**	**R814**	**R916**	**R1,027**	**1,380**	**1,553**
Accident-related	0	0	0	0	0	0	1	1	0
Highway incidents	**10,063**	**14,161**	**4,752**	**R7,296**	**R12,764**	**R11,917**	**R11,861**	**12,968**	**14,281**
Accident-related	330	347	302	249	**R244**	R289	R257	264	219

KEY: R = revised

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Table 2-6 Cont'd Hazardous Materials Safety and Property Damage Data

	1975	1980	1985	1990	1995	1996	1997	1998	1999
Rail incidents	**694**	**1,271**	**842**	**1,279**	**1,153**	**R1,111**	**R1,102**	**990**	**1,039**
Accident-related	109	134	61	48	50	R43	52	51	53
Water[a] incidents	**28**	**34**	**7**	**7**	**12**	**6**	**R5**	**11**	**8**
Accident-related	0	2	0	0	0	0	0	0	0
Other[b] incidents	**19**	**30**	**304**	**0**	**0**	**0**	**0**	**0**	**0**
Accident-related	1	3	1	0	0	0	0	0	0
Total property damage (current $ thousands)[c]	**8,090**	**10,829**	**22,993**	**32,353**	**R30,903**	**R46,849**	**R33,394**	**45,796**	**31,407**
Accident-related	6,051	6,236	20,268	24,792	23,516	R37,737	R25,069	36,770	19,406
Air property damage	**8.9**	**12.3**	**12.3**	**142**	**R101**	**87**	**R336**	**267**	**283**
Accident-related	0	0	0	0	0	0	0	0	0
Highway property damage	**5,584**	**7,324**	**12,690**	**20,190**	**R22,144**	**R29,268**	**R24,664**	**28,155**	**23,213**
Accident-related	3,694	3,782	10,175	14,132	16,256	R22,277	R17,730	21,332	13,361
Rail property damage	**2,488**	**2,952**	**10,274**	**11,952**	**8,485**	**R17,374**	**R8,355**	**16,360**	**7,850**
Accident-related	2,357	2,357	10,094	10,660	7,260	15,460	7,339	15,438	6,045
Water[a] property damage	**6.1**	**505**	**3.2**	**70**	**174**	**120**	**R38**	**1015**	**61**
Accident-related	0	81	0	0	0	0	0	0	0
Other[b] property damage	**3.5**	**35**	**14.4**	**0**	**0**	**0**	**0**	**0**	**0**
Accident-related	0.3	15.6	<0.1	0	0	0	0	0	0

KEY: R = revised

[a] Water category only includes nonbulk marine. Bulk marine hazardous materials incidents are reported to the U.S. Coast Guard and are not included.

[b] Other category includes freight forwarders and modes not otherwise specified.

[c] Property damage under $30,000 is reported to the nearest $100. Property damage $30,000 or greater is reported to the nearest $1,000, therefore the total may not equal the sum.

NOTES: Hazardous materials information system database operations were initiated in 1971. The Office of Hazardous Materials Safety determines whether fatalities and injuries should be classified as hazardous material-related after telephone contact with the carriers submitting incident reports.

SOURCES: 1975-85: U.S. Department of Transportation, Research and Special Programs Administration, Office of Hazardous Materials Safety, Hazardous Materials Information System Database, 1999. 1990-99: Ibid., Internet site http://hazmat.dot.gov/10yearfrm.htm, as of May 2, 2000.

Table 2-7 Transportation-Related Occupational Fatalities[a]

	1992	1993	1994	1995	1996	1997	1998
Fatalities							
Highway[b]	1,158	1,243	1,343	1,346	1,346	R1,393	1,431
Nonhighway[c]	436	392	409	387	374	377	384
Aircraft	353	282	426	283	324	261	223
Worker struck by vehicle[d]	346	R365	391	388	353	367	413
Water vehicle[e]	109	120	94	87	119	109	112
Railway[f]	65	86	81	82	74	93	60
Transportation-related[g]	**2,484**	**2,501**	**2,762**	**2,587**	**2,601**	**R2,605**	**2,630**
Total occupational fatalities	6,217	6,331	6,632	6,275	6,202	R6,238	6,026
% of total occupational fatalities							
Highway	19	20	20	21	22	22	24
Nonhighway	7	6	6	6	6	6	6
Aircraft	6	4	6	5	5	4	4
Worker struck by vehicle	6	6	6	6	6	6	7
Water vehicle	2	2	1	1	2	2	2
Railway	1	1	1	1	1	1	1
Transportation-related	**40**	**40**	**42**	**41**	**42**	**42**	**44**

KEY: R = revised

[a] Based on the 1992 Bureau of Labor Statistics, Occupational Injury and Illness Classification Structures.

[b] Includes collisions between vehicles/mobile equipment moving in the same or opposite directions, such as in an intersection; between moving and standing vehicles/mobile equipment at the side of a roadway; or a vehicle striking a stationary object. Also includes noncollisions, e.g., jack-knifed or overturned vehicle/mobile equipment–no collision; ran off highway–no collision; struck by shifting load; sudden start or stop, not elsewhere classified.

[c] Refers to farms and industrial premises. Includes collisions between vehicles/mobile equipment; vehicles/mobile equipment striking a stationary object. Also includes noncollisions such as a fall from a moving vehicle/mobile equipment, fall from and struck by vehicle/mobile equipment, overturned vehicle/mobile equipment, and loss of control of vehicle/mobile equipment.

[d] Includes worker struck by vehicle/mobile equipment in roadway, on side of road, in a parking lot, or nonroad area.

[e] Includes collisions, explosions, fires, fall from or on ship/boat, and sinking/capsized water vehicles involved in transportation. Does not include fishing boats.

[f] Includes collisions between railway vehicles, railway vehicle and other vehicle, railway vehicle and other object, and derailment.

[g] Numbers may not add to totals because transportation categories may include subcategories not shown separately.

NOTES: Percents may not add to totals due to rounding. The above categories do not define the types of jobs people had, nor the industries in which they worked. The categories define the ways in which they died. For example, a sales representative traveling for business reasons who is killed in a rail accident would be listed under rail.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *News: National Census of Fatal Occupational Injuries*. Internet site www.bls.gov/oshhome.htm, as of May 8, 2000. This document is based on the U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries (Washington, DC: Annual issues), table 1.

Table 2-8 Reporting Thresholds for Property Damage by U.S. Department of Transportation Modal Administrations

Modal administration	Reporting threshold
Federal Aviation Administration	More than $25,000 damage to property other than the aircraft.
Federal Highway Administration (FHWA)	None; each state defines its own threshold and FHWA collects state reports.
Federal Railroad Administration	More than $6,600 in damages to railroad on-track equipment, signals, track, track structures, and roadbed for accidents other than at grade crossings. No threshold for grade-crossing accidents.
National Highway Traffic Safety Administration	None; property-damage-only crashes are recorded through the General Estimates System, a nationally representative sample of police-reported crashes of all severities.
Federal Transit Administration	More than $1,000.
Research and Special Programs Administration	More than $50,000 for gas pipelines. More than $50,000 for hazardous liquid pipelines.
U. S. Coast Guard	More than $25,000 for commercial vessels. More than $500 for recreational boats.

SOURCES:

Federal Aviation Administration: U.S. General Accounting Office, *Transportation Safety: Opportunities for Enhancing Safety Across Modes*, T-RCED-94-120 (Washington, DC: February 1994).

Federal Highway Administration: U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 1998*, DOT HS 808 983 (Washington, DC: 1999); U.S. Department of Transportation, Federal Highway Administration, personal communication, 1997.

Federal Railroad Administration: U.S. Department of Transportation, Federal Railroad Administration, *Railroad Safety Statistics Annual Report 1998* (Washington, DC: July 1999).

Federal Transit Administration: U.S. Department of Transportation, Federal Transit Administration, *Safety Management Information Statistics*, DOT-FTA-MA-26-5011-00-1 (Washington, DC: 1999).

Research and Special Programs Administration: *Gas pipeline:* 49 CFR 191.3 (as of Oct. 1, 1999).

Oil pipeline: 49 CFR 195.50 (as of Oct. 1, 1999).

U.S. Coast Guard: Commercial shipping: 46 CFR 4.05-1 (as of Oct. 1, 1999).

Recreational boating: 33 CFR 173.55 (as of Oct. 1, 1999).